

WHAT IS CLAIMED IS:

1. A method for modifying a property of a graphic object in a computer graphics program, comprising:
  - displaying a graphic object in a computer graphics program;
  - 5 displaying a button object manipulator on the graphic object;
  - activating the button object manipulator; and
  - directly modifying a property of the graphic object in response to the activation.
- 10 2. The method of claim 1, wherein the activating comprises:
  - placing a cursor controlled by a pointing device over the button object manipulator; and
  - clicking a button on the pointing device to activate the button object manipulator without dragging the button object manipulator.
- 15 3. The method of claim 1, wherein the property comprises a graphically displayed property of the graphic object.
4. The method of claim 1, wherein:
  - 20 the property of the graphic object identifies a set of object manipulators that are displayed on the graphic object and can be used to manipulate the graphic object;
  - and
  - the modification of the property changes the set of object manipulators.

5. The method of claim 1, wherein the modifying a property of the graphic object comprises:

displaying a discrete number of acceptable property values; and  
5 selecting one or more of the acceptable property values.

6. The method of claim 1, further comprising displaying multiple button object manipulators in geometrically meaningful locations on the graphic object when language-based descriptions of properties associated with the one or more button  
10 object manipulator are potentially geometrically confusing.

7. A method for displaying an object manipulator in a computer graphics program comprising:

displaying a graphic object in a computer graphics program;  
15 displaying an object manipulator on the graphic object in a color, wherein the color of the object manipulator indicates whether activation of the object manipulator will affect one or more properties of another object.

8. A method for displaying an object manipulator in a computer graphics  
20 program comprising:

displaying a graphic object in a computer graphics program;  
displaying an object manipulator on the graphic object; and  
reorienting the object manipulator when an initial orientation is visually

confusing or indistinct.

9. The method of claim 8, wherein the reoriented object manipulator is not visible when the orientation of the reoriented object manipulator is visually  
5 confusing or indistinct.

10. A method for modifying a property of a graphic object in a computer graphics program, comprising:

- (a) displaying a graphic object in a computer graphics program;
- 10 (b) displaying an object manipulator on the graphic object, wherein:
  - (i) the object manipulator may be in two or more function states;
  - (ii) each function state enables the object manipulator to perform one or more discrete functions that modify one or more properties of the graphic object;
- 15 (c) activating the object manipulator;
- (d) modifying the function state of the object manipulator; and
- (e) modifying one of the properties of the graphic object.

11. The method of claim 10, wherein the function state is modified by  
20 pressing and releasing a control key.

12. The method of claim 10, further comprising displaying a graphic image to graphically indicate the function state of the object manipulator.

13. A method for displaying an object manipulator in a computer graphics program, comprising:
- displaying a graphic object in a computer graphics program;
  - 5 displaying an object manipulator on the graphic object;
  - activating the object manipulator; and
  - displaying a bitmap image at a cursor position if selecting the cursor position will result in an error condition when interacting with the object manipulator.
- 10 14. A method for modifying a property of a graphic object in a computer graphics program, comprising:
- displaying a graphic object in a computer graphics program;
  - displaying an object manipulator on the graphic object wherein a particular glyph shape of the object manipulator indicates an alignment of the graphic object
  - 15 with respect to one or more additional objects.;
  - activating the object manipulator; and
  - modifying a property of the graphic object in response to the activation.
- 15 15. A method for displaying an object manipulator in a computer graphics program, comprising:
- displaying a graphic object in a computer graphics program;
  - displaying an object manipulator on the graphic object wherein the object manipulator is displayed in a translucent color, such that the graphic object is visible

behind the object manipulator.

16. An apparatus for modifying a property of a graphic object in a computer graphics program of a computer system comprising:

- 5 (a) a computer having a memory;
- (b) an application executing on the computer, wherein the application is configured to:
- (i) display a graphic object in a computer graphics program;
- (ii) display a button object manipulator on the graphic object;
- 10 (iii) activate the button object manipulator; and
- (iv) directly modify a property of the graphic object in response to the activation.

17. The apparatus of claim 16, wherein the application is configured to  
15 activate by:

placing a cursor controlled by a pointing device over the button object manipulator; and

clicking a button on the pointing device to activate the button object manipulator without dragging the button object manipulator.

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18. The apparatus of claim 16, wherein the property comprises a graphically displayed property of the graphic object.

19. The apparatus of claim 16, wherein:  
the property of the graphic object identifies a set of object manipulators that  
are displayed on the graphic object and can be used to manipulate the graphic object;  
and  
5 the modification of the property changes the set of object manipulators.
20. The apparatus of claim 16, wherein the application is configured to  
modify a property of the graphic object by:  
displaying a discrete number of acceptable property values; and  
10 selecting one or more of the acceptable property values.
21. The apparatus of claim 16, wherein the application is further  
configured to display multiple button object manipulators in geometrically  
meaningful locations on the graphic object when language-based descriptions of  
15 properties associated with the one or more button object manipulator are potentially  
geometrically confusing.
22. An apparatus for displaying an object manipulator in a computer  
graphics program of a computer system comprising:  
20 (a) a computer having a memory;  
(b) an application executing on the computer, wherein the application is  
configured to:  
(i) display a graphic object in a computer graphics program; and

(ii) display an object manipulator on the graphic object in a color, wherein the color of the object manipulator indicates whether activation of the object manipulator will affect one or more properties of another object.

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23. An apparatus for displaying an object manipulator in a computer graphics program of a computer system comprising:

- (a) a computer having a memory;
- (b) an application executing on the computer, wherein the application is

10 configured to:

- (i) display a graphic object in a computer graphics program; and
- (ii) display an object manipulator on the graphic object; and
- (iii) reorient the object manipulator when an initial orientation is visually confusing or indistinct.

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24. The apparatus of claim 23, wherein the reoriented object manipulator is not visible when the orientation of the reoriented object manipulator is visually confusing or indistinct.

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25. An apparatus for modifying a property of a graphic object in a computer graphics program of a computer system comprising:

- (a) a computer having a memory;
- (b) an application executing on the computer, wherein the application is

configured to:

- (i) display a graphic object in a computer graphics program;
- (ii) display an object manipulator on the graphic object, wherein:
  - (1) the object manipulator may be in two or more function  
5 states; and
  - (2) each function state enables the object manipulator to perform one or more discrete functions that modify one or more properties of the graphic object;
- (iii) activate the object manipulator;
- 10 (iv) modify the function state of the object manipulator; and
- (v) modify a property of the graphic object.

26. The apparatus of claim 25, wherein the function state is modified by pressing and releasing a control key.

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27. The apparatus of claim 25, wherein the application is further configured to display a graphic image to graphically indicate the function state of the object manipulator.

20 28. An apparatus for displaying an object manipulator in a computer graphics program of a computer system comprising:

- (a) a computer having a memory;
- (b) an application executing on the computer, wherein the application is



configured to:

- (i) display a graphic object in a computer graphics program;
- (ii) display an object manipulator on the graphic object;
- (iii) activate the object manipulator; and
- 5 (iv) display a bitmap image at a cursor position if selecting the cursor position will result in an error condition when interacting with the object manipulator.

29. An apparatus for modifying a property of a graphic object in a  
10 computer graphics program of a computer system comprising:

- (a) a computer having a memory;
- (b) an application executing on the computer, wherein the application is configured to:

- (i) display a graphic object in a computer graphics program;
- 15 (ii) display an object manipulator on the graphic object wherein a particular glyph shape of the object manipulator indicates an alignment of the graphic object with respect to one or more additional objects;
- (iii) activate the object manipulator; and
- (iv) modify a property of the graphic object in response to the  
20 activation.

30. An apparatus for displaying an object manipulator in a computer graphics program of a computer system comprising:

(a) a computer having a memory;  
(b) an application executing on the computer, wherein the application is configured to:

- (i) display a graphic object in a computer graphics program; and  
5 (ii) display an object manipulator on the graphic object in a translucent color, such that the graphic object is visible behind the object manipulator.

31. An article of manufacture comprising a program storage medium  
10 readable by a computer and embodying one or more instructions executable by the computer to perform a method for modifying a property of a graphic object in an object-oriented computer graphics system, the method comprising:

- means for displaying a graphic object in a computer graphics program;  
means for displaying a button object manipulator on the graphic object;  
15 means for activating the button object manipulator; and  
means for directly modifying a property of the graphic object in response to the activation.

32. The article of manufacture of claim 31, wherein the means for  
20 activating comprises:

- means for placing a cursor controlled by a pointing device over the button object manipulator; and  
means for clicking a button on the pointing device to activate the button object

manipulator without dragging the button object manipulator.

33. The article of manufacture of claim 31, wherein the property comprises a graphically displayed property of the graphic object.

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34. The article of manufacture of claim 31, wherein:

the property of the graphic object identifies a set of object manipulators that are displayed on the graphic object and can be used to manipulate the graphic object; and

10 the modification of the property changes the set of object manipulators.

35. The article of manufacture of claim 31, wherein the means for modifying a property of the graphic object comprises:

means for displaying a discrete number of acceptable property values; and

15 means for selecting one or more of the acceptable property values.

36. The article of manufacture of claim 31, further comprising means for displaying multiple button object manipulators in geometrically meaningful locations on the graphic object when language-based descriptions of properties associated with the one or more button object manipulator are potentially geometrically confusing.

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37. An article of manufacture comprising a program storage medium readable by a computer and embodying one or more instructions executable by the

computer to perform a method for displaying an object manipulator in an object-oriented computer graphics system, the method comprising:

means for displaying a graphic object in a computer graphics program;

means for displaying an object manipulator on the graphic object in a color,

5 wherein the color of the object manipulator indicates whether activation of the object manipulator will affect one or more properties of another object.

38. An article of manufacture comprising a program storage medium readable by a computer and embodying one or more instructions executable by the  
10 computer to perform a method for displaying an object manipulator in an object-oriented computer graphics system, the method comprising:

means for displaying a graphic object in a computer graphics program;

means for displaying an object manipulator on the graphic object;

means for reorienting the object manipulator when an initial orientation is  
15 visually confusing or indistinct.

39. The article of manufacture of claim 38, wherein the reoriented object manipulator is not visible when the orientation of the reoriented object manipulator is visually confusing or indistinct.

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40. An article of manufacture comprising a program storage medium readable by a computer and embodying one or more instructions executable by the computer to perform a method for modifying a property of a graphic object in an

object-oriented computer graphics system, the method comprising:

- (a) means for displaying a graphic object in a computer graphics program;
- (b) means for displaying an object manipulator on the graphic object,

wherein:

- 5                   (i) the object manipulator may be in two or more function states;
- (ii) each function state enables the object manipulator to perform one or more discrete functions that modify one or more properties of the graphic object;
- (c) means for activating the object manipulator;
- 10               (d) means for modifying the function state of the object manipulator; and
- (e) means for modifying a property of the graphic object.

41. The article of manufacture of claim 40, wherein the function state is modified by pressing and releasing a control key.

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42. The article of manufacture of claim 40, further comprising means for displaying a graphic image to graphically indicate the function state of the object manipulator.

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43. An article of manufacture comprising a program storage medium readable by a computer and embodying one or more instructions executable by the computer to perform a method for displaying an object manipulator in an object-oriented computer graphics system, the method comprising:

means for displaying a graphic object in a computer graphics program;  
means for displaying an object manipulator on the graphic object;  
means for activating the object manipulator; and  
means for displaying a bitmap image at a cursor position if selecting the cursor  
5 position will result in an error condition when interacting with the object manipulator.

44. An article of manufacture comprising a program storage medium  
readable by a computer and embodying one or more instructions executable by the  
computer to perform a method for displaying an object manipulator in an object-  
10 oriented computer graphics system, the method comprising:  
means for displaying a graphic object in a computer graphics program;  
means for displaying an object manipulator on the graphic object, a particular  
glyph shape of the object manipulator indicates an alignment of the graphic object  
with respect to one or more additional objects.

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45. An article of manufacture comprising a program storage medium  
readable by a computer and embodying one or more instructions executable by the  
computer to perform a method for displaying an object manipulator in an object-  
oriented computer graphics system, the method comprising:  
20 means for displaying a graphic object in a computer graphics program;  
means for displaying an object manipulator on the graphic object, wherein the  
object manipulator is displayed in a translucent color, so the graphic object is visible  
behind the object manipulator.